UNITED STATES PATENT AND TRADEMARK OFFICE

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/671,343	09/25/2003	Shawn Joseph Baranczyk	ROC920030213US1	7069

30206   7590   09/06/2007
IBM CORPORATION
ROCHESTER IP LAW DEPT. 917
3605 HIGHWAY 52 NORTH
ROCHESTER, MN 55901-7829

EXAMINER
HOMAYOUNMEHR, FARID

ART UNIT	PAPER NUMBER
2132	

MAIL DATE	DELIVERY MODE
09/06/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/671,343	Applicant(s) BARANCZYK ET AL.
	Examiner Farid Homayounmehr	Art Unit 2132

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1) ☒ Responsive to communication(s) filed on *6/22/07*.

2a) ☒ This action is **FINAL**.   2b) ☐ This action is non-final.

3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4) ☒ Claim(s) *1-11,13-24 and 26-29* is/are pending in the application.

   4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5) ☐ Claim(s) _____ is/are allowed.

6) ☒ Claim(s) *1-11, 13-24, 26-29* is/are rejected.

7) ☐ Claim(s) _____ is/are objected to.

8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9) ☐ The specification is objected to by the Examiner.

10) ☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

   Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

   Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

   a)☐ All   b)☐ Some * c)☐ None of:

   1. ☐ Certified copies of the priority documents have been received.

   2. ☐ Certified copies of the priority documents have been received in Application No. _____.

   3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

   * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)

2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.

4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date _____.

5) ☐ Notice of Informal Patent Application

6) ☐ Other: _____.

DETAILED ACTION

1.   This action is responsive to communications: application, filed 9/23/2003;

amendment filed 6/22/2007.

2.   Claims 1-11, 13-14, 26-29 are pending in the case.

Response to Arguments

3.   Applicant's arguments were fully considered, but found non persuasive.

Rejection under section 101

4.   Applicant's argument relative to rejection of claim 29 is found non persuasive.

Claim 29, in its amended form, includes a program code. The program code is a non

statutory subject matter even upon execution. A conventional computer readable

medium storing a program code is considered statutory subject matter. The program

code is not statutory subject matter. The claim also includes a recordable computer

readable signal bearing medium. Applicant argues their specification at page 9 lines 16-

20 distinguishes the "readable medium" from the "transmission medium". The

specification at page 9 lines 16-20 reads: *"Examples of computer readable signal bearing*

media include but are not limited to recordable type media such as volatile and non-volatile

memory devices, floppy and other removable disks, hard disk drives, magnetic tape, optical disks

(e.g., CD-ROMs, DVDs, etc.), among others, and transmission type media such as digital and

analog communication links."

The statement cited above not only does not distinguish the "readable medium" from the

"transmission medium, but also clearly includes the "transmission medium" as a form of

"readable medium". Therefore, applicant's argument is non persuasive.

Rejection under section 102

5.   Applicant argues: "Chan lacks any disclosure of encrypting an SQL statement

and storing the encrypted SQL statement in an execution log of a database monitor. In

fact, neither the term "log" nor the term "monitor" is even found in the reference".

However, Chan teaches what is equivalent of a "log" and a "monitor" as claimed by the

applicant. Applicant states that a conventional database monitor is a well known

program used in a database management system to log the execution details of the

system in an execution log, and is often used to optimize the system and/or the queries

processed by the system (see applicant's Remarks in page 2). However, applicant's

claim invention is not directed to a conventional database monitor, as it is not secured.

Applicant's claim invention is directed to a specialized "monitor" and "log", which is

created by the method outlined in the claim language. As specified by the claim, the

"monitor" encrypts the SQL statements, and stores them as an execution log. The

process of encrypting the SQL statements and storing the encrypted SQL statements is

clearly taught by Chan. Calling the device that performs the encryption and storage a

"monitor", or the stored encrypted SQL statements a "log" does not distinguish the

invention from the prior art. Note that Chan Fig 3 and associated text teaches a

"monitor" (the modified DBMS access procedure) and a "log" (stored items 242) as

claimed by the invention (see also Fig. 5).

Applicant further argues: "In fact, Chan does not even disclose any encryption mechanism in a

database server. Rather, clients are required to encrypt SQL statements, while a decryption

engine in the server is used to decrypt those statements". However, Chan discloses a

distributed system, which includes performing encryption of SQL statements. As an

example see system 200 depicted in Chan's Fig. 2, which includes both the server and

the client. The client part includes item 108, which is a modified **database** management

system access procedure. Therefore, Chan teaches encryption of SQL statements in

his disclosed <u>distributed</u> database system. In addition, it is noteworthy that the claim

requires encryption of SQL statements (does not have to be performed in a database),

and storing the encrypted SQL statements in the database.

With regards to the newly added limitations to claim 1, applicant argues that there is no

evidence of conventionality of displaying encrypted data such as encrypted SQL

statements. However, Examiner has shown that displaying log files is conventional. It is

also conventional to encrypt logged information to protect them from disclosure. An

example of scenarios where logs are encrypted is a banking or financial organization, which encrypt the records (logs) of financial transactions or checks. Another example can be found in US Patent No. 6938015, col. 1 lines 55-65. Therefore, it is conventional to encrypt logs. If the logs are to be used, they must be displayed and selected for decryption. Therefore, it is conventional to display encrypted logs. All the new limitations of claim 1 is discussed in the rejections outlined in the following sections.

With respect to claim 3, as mentioned by the applicant, the claim generally recites a method of logging query execution in a database management system. Logging the encrypted SQL statement is a form of logging an encrypted query execution, and therefore meets the broad requirements of claim 3.

With regards to limitations of claim 12, as discussed above, it is conventional in the art to display the encrypted logs. Therefore applicant's argument that limitations of claim 12 are non obvious is not persuasive.

Applicant's additional arguments relative to claims 3-11, and 13-14 and 26-29 is substantially the same as arguments discussed in the above, and therefore is found non persuasive.

Claim Rejections - 35 USC § 101

6.   35 U.S.C. 101 reads as follows:

> Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

7.   Claim 29 rejected as being directed to non-statutory subject matter. Claim 29 recites a program product that is borne as a computer readable signal bearing medium. Broadly construed, a signal bearing medium is merely a digital or electronic signal and is intangible. In order for the program product to be statutory under 35 USC 101, the claim as a whole must be concrete, useful, and tangible.

Claim Rejections - 35 USC § 103

8.   The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

9.   Claims 1-11, 13-24, 26-29 rejected under 35 U.S.C. 103(a) as being unpatentable over Chan (US Patent No. 5,713,018, dated Jan. 27, 1998).

In reference to claim 1:

Chan discloses a method of executing a query in a database management system, the method comprising:

•   Receiving an SQL statement from an application program coupled to the

database management system, where the SQL statements are received from a client

through the clients' DBMS access program. (Column 2, lines 48-67)

•   Executing the SQL program. (Column 1, lines 65-67)

•   Encrypting the SQL statement to generate an encrypted representation of the

SQL statement, where the SQL is encrypted into an encrypted SQL string. (Column 3,

lines 11-51)

•   Logging execution of the SQL statement in a database monitor by storing the

encrypted representation of the SQL statement in an execution log managed by the

database monitor (Column 3, lines 50-60) & (Column 4, lines 35-60);

•   Chan teaches retrieving the encrypted representation of the SQL statement from

the execution log, decrypting the encrypted representation of the SQL statement to

generate an unencrypted representation of the SQL statement (Fig. 4 and associated

text, particularly col. 4, lines 12 to 37), but Chan does not explicitly mention displaying

the unencrypted representation of SQL statements. However, displaying the content of

stored information, especially logs is widely practiced and well known in the art. An

example of such case is when the system administrator debugging the system looks

into logs to review the system history. The motivation to display the log information is

self evident as the logs are stored to track the events in the system. Therefore, it would

have been obvious to the person skilled in art to display the information logged in the

system.

In reference to claim 2,

Chan (Column 3, lines 12-37) discloses the method of claim 1, further Comprising encrypting at least one value passed to one of host variable and a parameter marker used by the SQL statement, wherein logging execution of the SQL statement further comprises storing the encrypted value in the execution log, where the SQL statement is the value passed to the host variable, the encrypted SQL string also known as the constant string (Column 3, lines 50-55) and the parameter markers which are used for the arguments.

In reference to claim 3:

Chan discloses a method of logging query execution in a database management system, the method comprising,

•   Generating an encrypted representation of an execution detail for a query executed by the database management system (Column 3,lines 10-37)

•   Logging the execution detail for the query in an execution log for the database management system by storing the encrypted representation thereof in the execution log,

where the execution detail is logged in a table and stored therein in its encrypted representation. (Column 3, lines 50-60) & (Column 4, lines 50-60)

In reference to claim 4:

Chan fails to explicitly disclose the method of claim 3, further comprising receiving the

query in an unencrypted form from an application program in communication with the

database management system.

However, the Examiner takes official notice that receiving an SQL query in unencrypted

form was well known at the time of the invention. In fact it was the state of the prior art.

Chan attempts to provide some measure of security in executing SQL statements by a

DBMS. The prior art comprises transmitting and receiving these commands in

unencrypted form.

It would have been obvious to one of ordinary skill in the art at the time of invention to

receive the query in unencrypted form in order to provide the advantage of speeding up

processing and execution times without the added overhead of implemented security.

In reference to claim 5:

Chan fails to explicitly disclose the method of claim 4, wherein generating the encrypted

representation is performed after communicating the query to the database

management system.

Chan instead discloses that the SQL statements are sent and that the encrypted

versions of these statements are generated. Chan does not explicitly disclose the order

of these events.

The Examiner takes official notice that generating the encrypted representation after

communication the query to the DBMS was well known at the time of invention.

Often time, a query is announced to a DBMS as a preparatory handshake signal to

determine if the server is active and waiting. Once the handshake is complete, the

encryption may further proceed. It is advantageous to do this because it conserves on

the computational resources necessary to perform the encryption if the encryption is not

necessary.

It would have been obvious to one of ordinary skill in the art at the time of invention to

generate the encrypted representation after communicating the query in order to first

determine which version of the DB access program the client is using. (Column 2, lines

60-67)

In reference to claim 6:

Chan discloses the method of claim 3, wherein generating the encrypted representation

is performed prior to communicating the query to the database management system

(Column 4, lines 40-50);

And decrypting the execution detail in association with displaying the execution log (see

response to claim 1 at the last bullet).

In reference to claim 7:

Chan (Column 3, lines 12-60) discloses the method of claim 3, wherein the execution

detail comprises a query Statement, where the query statement is the SQL or

"structured query" statement.

In reference to claim 8:

Chan (Column 3, lines 12-60) discloses the method of claim 3, wherein the execution

detail comprises a value passed to a host variable during execution of the query, where

the host variable is the encrypted SQL string, and the value passed to the variable is the

value of the function Encrypt().

In reference to claim 9:

Chan (Column 3, lines 12-60) discloses the method of claim 3, wherein the execution

detail comprises a value passed to a host variable during execution of the query where

the host variable is the encrypted SQL string, and the value passed to the variable is the

value of the function Encrypt().

In reference to claim 10:

Chan fails to explicitly disclose the method of claim 3, further comprising logging a

second execution detail for the query in the execution log in an unencrypted

representation.

Chan rather discloses logging the statements in encrypted form in a table. (Column 3,

lines 50- 60) & (Figure 3)

It would have been obvious to one of ordinary skill in the art to log an unencrypted

representation of the string in order to conserve the resources necessary to compute

the encryption.

In reference to claim 11 :

Chan discloses the method of claim 10, wherein the second execution detail includes at

least one of an access plan and a performance statistic associated with execution of the

query, where the access plan is the 2nd modified access program used by trusted

clients. (Column 2, lines 60-67) & (Column 3, line 60 - Column 4, line 5)

Claim 12 is cancelled by the applicant

Claim 13 is rejected for the same reasons as claim 26.

In reference to claim 14:

Chan (Column 2, line 60- Column 3, line 60) discloses the method of claim 3, further

comprising determining if database monitoring is enabled in the database management

system, wherein generating the encrypted representation is performed if it is determined

that database monitoring is enabled where the database monitoring comprises receiving

incoming SQL statements, and where the encrypted representation is generated if the

system of Chan is used.

In reference to claim 15:

Chan (Column 3, lines 12-60) discloses the method of claim 3, wherein the query

comprises an SQL statement.

In reference to claim 16:

Chan (Column 2, line 60- Column 3, line 60) discloses an method apparatus,

comprising:

• At least one processor; (Column 2,lines 40-45)

• A memory within which is stored an execution log; (Column 2,lines 40-60) &

(Column 3, lines 50-60) • Program code configured to be executed by the at least one

processor to log query execution in a database management system by generating an

encrypted representation of an execution detail for a query executed by the database

management system (Column 3, lines 10-25), and logging the execution detail for the

query in the execution.log by storing the encrypted representation thereof in the

execution log. (Column 3, lines 50-60)

Claim 17 is rejected for the same reasons as claim 4.

Claim 18 is rejected for the same reasons as claim 5.

Claim 19 is rejected for the same reasons as claim 6.

In reference to claim 20:

Chan (Column 3, lines 50-60) discloses the apparatus of claim 16, wherein the

execution detail comprises a query statement.

In reference to claim 21 :

Chan (Column 10, lines 10-37) disclose the apparatus of claim 16, wherein the

execution detail comprises a value passed to a host variable during execution of the query, where the host variable is the embedded constant string, and where the value passed to it is the value of the function of Encrypt(SQL statement with placeholders)

In reference to claim 22:

Chan (Column 3, lines 1-60) & (Column 4, lines 10-35) discloses the apparatus of claim 16, wherein the execution detail comprises a value passed to a parameter market during execution of the query, where the value passed to the parameter markers are the arguments.

Claim 23 is rejected for the same reasons as claim 10.

Claim 24 is rejected for the same reasons as claim 11.

Claim 25 is cancelled.

In reference to claim 26:

Chan (Column 3, lines 35-50) fails to explicitly disclose the apparatus of claim 25, wherein the program code is configured to generate the encrypted representation by encrypting the execution detail using a public key, and wherein the program code is configured to decrypt the execution detail by decrypting the execution detail using a private key paired with the public key.

Chan instead discloses encryption with the private key and decryption with the public key.

The examiner takes official notice that public key cryptography was well known to those of ordinary skill in the art at the time of invention. Public key cryptography encrypts with the public key and decrypts with the private key. The method Chan is advocating is a digital signature algorithm which encrypts with a private key and decrypts with the public key.

It would have been obvious to one of ordinary skill in the art at the time of invention to encrypt the SQL code with the public key and decrypt with the private key in order to establish the secrecy such that only the person with the private key would be able to read and decipher the query.

Claim 27 is rejected for the same reasons as claim 14.

In reference to claim 28:

Chan (Column 3, lines 50-60) discloses the apparatus of claim 16, wherein the query comprises an SQL statement.

Claim 29 is rejected for the same reasons as claim 16.

Claim 30 is cancelled.

Conclusion

10.   Applicant's amendments necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

11.   Any inquiry concerning this communication or earlier communications from the examiner should be directed to Farid Homayounmehr whose telephone number is (571) 272-3739. The examiner can be normally reached on 9 hrs Mon-Fri, off Monday biweekly.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Gilberto Barron can be reached on (571) 272-3799. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Farid Homayounmehr

8/31/2007

GILBERTO BARRÓN JR
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2100